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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/829,248	04/22/2004	Hiroyuki Nakashima	826.1945	8194

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EXAMINER
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LIEW, ALEX KOK SOON

ART UNIT	PAPER NUMBER
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2624

MAIL DATE	DELIVERY MODE
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07/24/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/829,248

Applicant(s)

NAKASHIMA ET AL.

Examiner

Alex Liew

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 – 3, 5, 9 and 10 – 14 rejected under 35 U.S.C. 102(b) as being anticipated by Brady (US pat no 5,761,326).

With regards to claim 1, Brady discloses an image processing apparatus which identifies a mobile object contained in an image captured by a high-resolution camera, comprising

- an extraction device extracting as a partial image a part of a high-resolution image captured by the high-resolution camera (see figure 2 – 2), and generating a low-resolution image having lower resolution (see column 12 lines 34 – 46 – the image taken at figure 2 – 2 is the high resolution image and data reduction is discussed at cited column),
- a detection device detecting the mobile object using the low-resolution image (see column 12 lines 34 – 46 – data reduction is use for searching the area of interest, area of interest shown in figure 5 – 35) and
- a recognition device recognizing the mobile object using a high-resolution image transmitted from the high-resolution camera when the mobile object is detect,

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and outputting a recognition result (see column 12 lines 34 – 46 – once detected identification of a car or truck is done, column 10 lines 5 – 9, also see column 12 lines 47 – 67 – the vehicle is identified through use of difference image between current and previous frame).

With regards to claim 2, Brady reads on an apparatus according to claim 1, wherein said extraction device extracts a plurality of partial images using a plurality of windows provided and arranged at an upper end, a lower end, a left end, or a right end of the high resolution image captured by high resolution camera (see figure 7B – there are six different images arranged in the larger window, 208), and generates a low-resolution image by arranging the plurality of partial images in one direction (see column 12 lines 34 – 60).

With regards to claim 3, Brady reads on an apparatus according to claim 1, wherein said extraction device extracts a plurality of partial images from the high resolution image captured by the high-resolution camera (see figure 7B – there are seven partial image within 208), generates a low-resolution image by combining the plurality of partial image (see column 12 lines 37 – 40 – a 2 X 2 kernel is use to reduce the resolution of the image in the region of interest), and generates a video picture from low-resolution images consecutive in a time series, and said detection device detects the mobile object using the generated video picture (see figure 2 – 2 – a video consists of series of sequential images put together in series).

With regards to claim 5, Brady discloses an apparatus according to claim 1, wherein said extraction device extracts the partial image using a window provided at a closest position to a running direction of the mobile object which enters the high-resolution image captured by the high-resolution camera (see figure 11 – the vehicle enters the image frame at the bottom of the image with a window place around the vehicle).

With regards to claim 9, Brady discloses an apparatus according to claim 1, further comprising a storage device storing information about a plurality of detection windows in the high-resolution image captured by the high-resolution camera, and information about a recognition window associated with each detection window, wherein said extraction device extracts a plurality of partial images using the plurality of detection windows, and generates a low-resolution image by combining the plurality of partial images, and when the mobile object is detected from a partial image in the low-resolution image, said recognition device extracts a recognition image from the high-resolution image transmitted from the high-resolution camera using a recognition window corresponding to a detection window used in extracting a partial image in which the mobile object is detected (see column 4 lines 7 – 9 – the data shown in figures 5, 7B and 11 is store in a storage device).

With regards to claims 10 – 14, see the rationale and rejection for claim 1.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brady ('326) as applied to claim 1 further in view of Benton (US pat no 5,479,526).

With regards to claim 4, Brady discloses all the limitations discussed in claim 1 including generating low-resolution image, but does not disclose generating a video picture by alternately inserting the two partial images as respective images. Benton discloses generating a video picture by alternately inserting the two partial images as respective images (see column 3 lines 27 – 40). One skilled in the art would include generating a video picture by alternately inserting the two partial images as respective images because to select the better image of the two to be inserted into the image, which produce the best possible image or frame.

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brady ('326) as applied to claim 1 further in view of Piccinelli (US pat no 6,829,373).

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With regards to claim 6, Brady discloses all the limitations discussed in claim 1 including generating low resolution image, but does not disclose changing a size of the window depending on a form the image. Piccinelli discloses changing a size of the window depending on a form the image (see column 7 lines 16 – 23). One skilled in the art would include changing a size of the window depending on a form the image because the window size needs to change in order to accompany the size of a smaller car, which makes the window smaller or accompany the size of a large truck, which needs to increase the size of the window; if the window is smaller than the object of interest then there will be some error identification.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brady ('326) as applied to claim 1 further in view Kakinami (US pat no 6,813,371).

With regards to claim 7, Brady discloses all the limitations discussed in claim 1 including generating low-resolution image, but does not disclose changing an angle of the window depending on a traveling direction of the mobile object. Kakinami discloses changing an angle of the window depending on a traveling direction of the mobile object (see column 9 lines 45 – 50 – TB is perpendicular to the road shown in the figure 6a). One skilled in the art would include step of changing an angle of the window depending on a traveling direction of the mobile object because if the object in the image is rotated by certain degree with respect to the images stored in a database, where this database contains image templates of different vehicle, might result in some error in the recognition

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process; aligning, in position and angle, the current vehicle object with the template image will increase recognition accuracy.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brady ('326) as applied to claim 1 further in view Hu (US pat no 5,867,584).

With regards to claim 8, Brady discloses all the limitations discussed in claim 1 including generating low-resolution image and extracting a portion showing movement from the high-resolution image (see figure 11 – 130), but does not disclose selecting an optimum window from the plurality of windows. Hu discloses selecting an optimum window from the plurality of windows (see column 2 lines 59 – 67). One skilled in the art would include step of selecting an optimum window from the plurality of windows because to make sure the window fit around the object in the image without any breaches, to ensure best possible recognition result.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alex Liew whose telephone number is (571)272-8623. The examiner can normally be reached on 9:30AM - 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alex Liew  
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7/22/07



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